

NEW COMBINATIONS IN *MONTIOPSIS* KUNTZE (PORTULACACEAE)

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ABSTRACT

New combinations are provided for eighteen species of *Montiopsis*, a South American genus previously treated in *Calandrinia* (Portulacaceae). The nomenclatural changes reflect monographic studies in the group and cladistic data on Portulacaceae.

KEY WORDS: Argentina, Bolivia, Chile, Perú, *Calandrinia*, *Montiopsis*, Portulacaceae, taxonomy

Montiopsis Kuntze (Portulacaceae) comprises ca. eighteen species, in two subgenera (*Montiopsis* and *Dianthroideae*). The plants are annual and perennial herbs, found in Chile and bordering regions of Argentina, Bolivia, and Perú. Species delimitation and relationships in *Montiopsis* have been problematic because of morphological variation and intergradation associated with a variety of arid and Andean habitats. Therefore, I undertook a revision of subg. *Montiopsis* (fifteen species), including investigation of phylogeny and evolution in the group (Ford 1992).

Montiopsis has traditionally (Pax & Hoffmann 1934; McNeill 1974; Nyananyo 1990) been included in *Calandrinia* Kunth. However, Carolin (1987) found that *Calandrinia* sensu lato is polyphyletic and divided it into several genera. He placed *Montiopsis* in *Baitaria* Ruiz & Pavón, with *Calandrinia* sect. *Acaules* Reiche. Herschkovitz (1990, 1991, 1993) showed that *Calandrinia* sect. *Acaules* is allied with *Calandrinia* sensu stricto, but these taxa are only weakly linked to *Montiopsis*. I have adopted his separate circumscription of the genus, necessitating the new combinations presented below.

The most comprehensive previous treatment of *Montiopsis* at the species level is that of Reiche (1898). He attempted to synthesize the numerous epithets described for Chilean taxa by Hooker & Arnott (1833), Barnéoud (*in* Gay 1847), and Philippi (summarized by Muñoz 1960). Reiche treated *Montiopsis* subg. *Montiopsis* as *Calandrinia* subg. *Hirsutae* Reiche (sects. *Hirsutae*,

Condensatae, and *Parviflorae*) and recognized *Montiopsis* subg. *Dianthoideae* as a section in *Calandrinia* subg. *Glabrae* Reiche.

Añón (1953, 1984) and Peralta (1988) included Argentinian species of *Montiopsis* in their floristic treatments. My monograph (Ford 1992) is based on extensive literature, herbarium, greenhouse, laboratory, and field studies, conducted to unify prior disparate taxonomies. The taxa accepted here synthesize previously published information and new data gathered during my project.

Montiopsis Kuntze, Rev. Gen. Pl. 3(2):14. 1898. TYPE: *Montiopsis boliviensis* Kuntze (= *Montiopsis cumingii* [Hook. & Arn.] D.I. Ford). BOLIVIA. Oruro: Challapata, 18°54'S 66°48'W, (11 Mar 1892), Kuntze s.n. (HOLOTYPE: NY; Isotype: CONC-73586).

MONTIOPSIS SUBG. MONTIOPSIS

Montiopsis subg. *Montiopsis* (= *Calandrinia* subg. *Hirsutae* Reiche, Ber. Deutsch. Bot. Ges. 15:502. 1897.).

The fifteen included species are pubescent (and sometimes glandular) annuals and perennials, with pantoporate pollen.

***Montiopsis berteroana* (Phil.) D.I. Ford, comb. nov.** BASIONYM: *Calandrinia berteroana* Phil., Linnaea 28:643. 1856. TYPE: CHILE. O'Higgins (VI). Prov. Cachapoal: Tagua-tagua, 34°30'S 71°06'W, Oct 1828, Bertero s.n. (LECTOTYPE [here designated]: SGO-48659 [bottom plant]; Probable isolectotypes: BM, MO-p.p., P-p.p.). The SGO sheet contains five plants and three labels. The lowermost specimen is nearest to the Bertero label and is one of the two plants which are branched and have fruit, in accordance with the diagnosis. The apparent duplicate sheets are numbered 535, and the P label lacks a date.

***Montiopsis capitata* (Hook. & Arn.) D.I. Ford, comb. nov.** BASIONYM: *Calandrinia capitata* Hook. & Arn., Bot. Misc. 3:334. 1833. TYPE: CHILE. Cordillera, (1831), Cuming 247 (LECTOTYPE [here designated]: K [photo-MO]; Isolectotypes: E-2 sheets [photo-A, MO, SGO], K [photo-MO]). This is the best collection of the syntypes at K annotated by Hooker as *C. capitata*. The K duplicates are mounted on the same sheet: the lectotype is marked Herb. Hooker; the isolectotype is marked Herb. Bentham.

Montiopsis copiapina (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia copiapina* Phil., Anales Mus. Nac. Santiago de Chile 8:25. 1891. TYPE: CHILE. Atacama (III). Prov. Chañaral: Pastos Largos, 26°35'S 69°03'W, 4000 m, (6 Jan 1885), *F. Philippi s.n.* (LECTOTYPE [here designated]: SGO-48505 [photo-MO]; Isolectotypes: LP SGO-38973 [photo-F UC] 48507).

Montiopsis cumingii (Hook. & Arn.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia cumingii* Hook. & Arn., Bot. Misc. 3:334. 1833. TYPE: CHILE. (1832), *Bridges* 427 (LECTOTYPE [here designated]: K (427) [photo-MO]; Isolectotypes: BM,E). The three syntypes belong to two species, and the protologue is ambiguous. The lectotypification made here accords with two of the syntypes and best preserves current usage of names (the other syntype belongs in *Montiopsis demissa*). The collection number on the K sheet is apparently miswritten.

Montiopsis demissa (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia demissa* Phil., Linnaea 28:644. 1856. TYPE: CHILE. "mixed with plants from Antuco," (Jan 1839), *Gay* (1414) (HOLOTYPE: SGO-48603 [photo-UC]; non typus-P). The Paris specimen is the type of *Montiopsis glomerata*.

Montiopsis gilliesii (Hook. & Arn.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia gilliesii* Hook. & Arn., Bot. Misc. 3:333. 1833. TYPE: CHILE. Cordillera, *Cuming* 218 (LECTOTYPE [here designated]: K [photo-MO]; Isolectotypes: BM,E-2 sheets [photo-A],F,GH).

Montiopsis glomerata (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia glomerata* Phil., Linnaea 28:643. 1856. TYPE: CHILE. "mixed with plants from Antuco," *Gay* (1414). (HOLOTYPE: P; Non typus-SGO). This specimen was determined as *Calandrinia capitata*, but the distinctive dense white trichomes make it a clear match for the protologue. The specimen at SGO is the type of *Calandrinia demissa*.

Montiopsis modesta (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia modesta* Phil., *Fl. Atacam.* 20. 1860. TYPE: CHILE. Antofagasta (II). Prov. Antofagasta: Río Frío, 25°05'S 69°05'W, (Feb 1854), *F. Philippi s.n.* (HOLOTYPE: SGO-48661). This specimen is identified on the label by Philippi as "*C. frigida* Ph." [non Barnéoud]; there is a loose paper in the packet with his *Calandrinia modesta* determination.

Montiopsis parviflora (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia parviflora* Phil., Anales Univ. Chile 85:317. 1894. TYPE: CHILE. Coquimbo (IV). Prov. Elqui: Paihuano, 30°01'S 70°25'W, *Peralta s.n.* (LECTOTYPE [here designated]: SGO-48623; Isolectotypes: SGO-38946 [photo-F,UC] 78208).

Montiopsis potentilloides (Barnéoud) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia potentilloides* Barnéoud in Gay, *Fl. Chile [Hist. Fisica y Politica de Chile, Botanica]* 2:512. 1847 ("1846"). TYPE: CHILE. Coquimbo (IV). Prov. Coquimbo, *Gay 964* (LECTOTYPE [here designated]: P [photo-MO]; Isolectotypes: G,NY,P). The lectotype sheet is annotated by Barnéoud. All the duplicates lack locality information except the G specimen.

Montiopsis ramosissima (Hook. & Arn.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia ramosissima* Hook. & Arn., *Bot. Misc.* 3:334. 1833. TYPE: CHILE. Valparaíso (V). Prov. Valparaíso: Valparaíso, 33°03'S 71°38'W, *Cuming 790* (HOLOTYPE: K-neg. 1139 [photo-MO]; Isotypes: CONC,E [photo-A,SGO],F-fragment,W [F neg. 30111]).

Montiopsis sericea (Hook. & Arn.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia sericea* Hook. & Arn., *Bot. Misc.* 3:334. 1833. TYPE: CHILE. Valparaíso (V). Prov. San Felipe: Sierra Bella Vista, 32°43'S 70°46'W, 1832, *Bridges 111* (LECTOTYPE [here designated]: K-Hooker herb.; Isolectotypes: BM,E,F,K-Bentham Herb.,W [F neg. 30113]).

Montiopsis trifida (Hook. & Arn.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia trifida* Hook. & Arn., *Bot. Misc.* 3:333. 1833. TYPE: CHILE. Valparaíso (V). Prov. Valparaíso: Valparaíso, 33°03'S 71°38'W, *Cuming 422* (LECTOTYPE [here designated]: K-neg. 1190 [photo-MO]; Isolectotypes: E-2 sheets). This is the best syntype found at K annotated by Hooker as *Calandrinia trifida*.

Montiopsis umbellata (Ruiz & Pavón) D.I. Ford, *comb. nov.* BASIONYM: *Talinum umbellatum* Ruiz & Pavón, *Syst. Veg. Fl. Peruv. Chil.* 117. 1798. TYPE: CHILE. Bío-Bío (VIII). Prov. Concepción: Concepción, 36°49'S 73°03'W, Nov-Jan (1778-1788), Ruiz & Pavón *s.n.* (LECTOTYPE [here designated]: MA). This is the only specimen of the syntypes with the locality specified.

Montiopsis uspallatensis (Phil.) D.I. Ford, *comb. nov.* BASIONYM: *Calandrinia uspallatensis* Phil., Anales Univ. Chile 85:307. 1894. TYPE: ARGENTINA. Prov. Mendoza. Depto. Las Heras: Termas del Inca, 32°49'S 69°55'W, "1891" (15 Jan 1886), Borchers *s.n.* (HOLOTYPE: SGO-48500 [photo-UC]). The expedition by Borchers (and F. Philippi)

was in 1885-1886, and the specimens were distributed in 1891; this perhaps explains the erroneous collection date cited in the protologue.

***MONTIOPSIS* SUBG. *DIANTHOIDEAE* (REICHE) D.I. FORD**

***Montiopsis* subg. *Dianthoideae* (Reiche) D.I. Ford, stat. nov. BASIONYM:**
Calandrinia sect. *Dianthoideae* Reiche, Ber. Deutsch. Bot. Ges. 15:501.
1897. LECTOTYPE (here designated): *Calandrinia cistiflora* Gillies ex
Arn. in Cheek, Edinburgh J. Nat. Geogr. Sci. 1:355. 1831.

This group consists of ca. three glabrous or glandular perennial species, with tricolporate pollen.

***Montiopsis andicola* (Gillies) D.I. Ford, comb. nov. BASIONYM:** *Calandrinia andicola* Gillies in Hook. & Arn., Bot. Misc. 3:332. 1833. TYPE:
ARGENTINA. "eastern side of the Cumbre" and Chile. Valparaíso (V). Prov. Los Andes: Alto de la Laguna, 32°49'S 70°09'W, *Gillies* s.n.
(HOLOTYPE: K-neg. 1189 [photo-A,LP,SGO]).

***Montiopsis cistiflora* (Gillies ex Arn.) D.I. Ford, comb. nov. BASIONYM:**
Calandrinia cistiflora Gillies ex Arn. in Cheek, Edinburgh J. Nat. Geogr. Sci. 1:355. 1831. TYPE: ARGENTINA. "Andes of Mendoza" and Chile, 2743-3048 m, (Mar 1826), *Gillies* s.n. (LECTOTYPE [here designated]: E-GL; Isolectotypes: E,K [photo-SGO]).

***Montiopsis gayana* (Barnéoud) D.I. Ford, comb. nov. BASIONYM:** *Calandrinia gayana* Barnéoud in Gay, Fl. Chile [Hist. Física y Política de Chile, Botánica] 2:503. 1847 ("1846"). TYPE: CHILE. O'Higgins (VI). Prov. Colchagua: Talcaregue, Valle del Azufre, (Feb 1831), Gay 83 (LECTOTYPE [here designated]: P; Isolectotype: P). Both P sheets are annotated by Barnéoud; the locality information on the lectotype matches most completely that given in the protologue.

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LITERATURE CITED

- Añón, D.C. (Suarez de Cullen). 1953. Las especies argentinas del género *Calandrinia* (Portulacaceae). *Bol. Soc. Argent. Bot.* 5:1-29.
- _____. 1984. Portulacaceae. pp. 169-194 in M. Correa, ed. *Flora Patagonica*. Vol. 4a. Buenos Aires: Inst. Nac. Tecn. Agropec.
- Ford, D.I. 1992. Systematics and evolution of *Montiopsis* subgenus *Montiopsis* (Portulacaceae). Ph.D. dissertation, Washington Univ., St. Louis, Missouri.
- Carolin, R.C. 1987. A review of the family Portulacaceae. *Austral. J. Bot.* 35:383-412.
- Gay, C. 1847. *Fl. Chile [Hist. Fisica y Politica de Chile, Botanica]*. Vol. 2. Fain & Thunet, Paris, France.
- Hershkovitz, M.A. 1990. Phylogenetic and morphological studies in Portulacaceae. Ph.D. dissertation, Univ. of California, Davis, California.
- _____. 1991. Phylogenetic assessment and revised circumscription of *Cistanthe* Spach (Portulacaceae). *Ann. Missouri Bot. Gard.* 78:1009-1021.
- _____. 1993. Revised circumscriptions and subgeneric taxonomies of *Calandrinia* and *Montiopsis* (Portulacaceae) with notes on phylogeny of the portulaceous alliance. *Ann. Missouri Bot. Gard.* 80 (in press).
- Hooker, W.J. & G.A.W. Arnott. 1833. Contributions towards a flora of South America and the islands of the Pacific [part 2]. *Bot. Misc.* 3:302-367.
- McNeill, J. 1974. Synopsis of a revised classification of the Portulacaceae. *Taxon* 25:725-728.
- Muñoz, C. 1960. *Las Especies de Plantas Descritas por R.A. Philippi en el Siglo XIX*. Univ. de Chile, Santiago, Chile.
- Nyananyo, B.L. 1990. Tribal and generic relationships in the Portulacaceae (Centrospermae). *Feddes Repert.* 101:237-241.
- Pax, R. & K. Hoffmann. 1934. Portulacaceae. pp. 234-262 in A. Engler & K. Prantl, (eds.). *Die Naturlichen Pflanzenfamilien* 2. Aufl., Bd. 16C. Engelmann, Berlin, Germany.
- Peralta, I.E. 1988. Sinopsis de las especies de *Calandrinia* (Portulacaceae) de los Andes mendocinos. *Bol. Soc. Argent. Bot.* 25:511-537.
- Reiche, C. 1898. *Flora de Chile*. Vol. 2. Univ. de Chile, Santiago, Chile.